



UNITED STATES PATENT AND TRADEMARK OFFICE

JH
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,056	09/26/2003	Abdo Y. Alfakih	Alfakih 1-1-1-6-24	1224
46850 7590 05/09/2007 MENDELSON & ASSOCIATES, P.C. 1500 JOHN F. KENNEDY BLVD., SUITE 405 PHILADELPHIA, PA 19102			EXAMINER CHU, WUTCHUNG	
			ART UNIT 2616	PAPER NUMBER
			MAIL DATE 05/09/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/673,056	Applicant(s) ALFAKIH ET AL.	
	Examiner Wutchung Chu	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-28 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :7/31/2006, 11/21/2005, and 9/26/2003.

DETAILED ACTION

Priority

1. Applicant's claim for domestic priority under 35 U. S.C. 119(e) is acknowledged.

Claim Objections

2. Claims 2-14 and 16-28 are objected to because of the following informalities: as the preamble of the claims should be written as "the method of claim" and "the network of claim" Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 10 line 1-2, the recitation of "the mixed –integer programming is used in each of the selecting and the identifying." is vague and indefinite because it is not known the metes and bounds of the claimed invention.

Regarding claim 11 line 1-2, the recitation of "the genetic programming is used in each of the selecting and the identifying." is vague and indefinite because it is not known the metes and bounds of the claimed invention.

5. Claims 15-28 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

Art Unit: 2616

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The claim(s) must be in one sentence form only. Note the format of the claims in the patent(s) cited.

In addition, the body of the claims are directed to method steps while the preamble is directed to a device, i.e. network manager, thus rendering the claims vague and indefinite.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-4, 6-18, and 20-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Shinomiya et al. (US7188280).

Regarding claim 1, Shinomiya et al. discloses a protecting route design method in a communication network (**see column 1 line 64-66**) comprising:

- receiving one or more demands for service (**see column 4 line 2-4**) in a mesh network (**see column 11 line 17**) comprising a plurality of nodes interconnected by a plurality of links (**see column 4 line 10 and 53**); and

- mapping each of the one or more demands onto a primary path (**see column 4 line 8-9 where the term working communication route corresponds to primary and see figure 1 working communication route**) and a restoration path (**see figure 1 protecting communication route**) in the network to generate a path plan for the one or more demands in the network (**see column 3 line 64**), wherein reduction of a portion of restoration time associated with failure-related cross-connections in the network is taken into account during the mapping (**see column 4 line 22-27**).

Regarding claim 2, Shinomiya et al. teaches a maximum number of failure-related cross-connections at all nodes in the network (**see column 6 line 62-67**) is less than a specified threshold (**see column 10 line 45-57 where the term parameter corresponds to threshold and column 8 line 49**).

Regarding claim 3, Shinomiya et al. teaches the mapping results in a maximum number of failure-related cross-connections at all nodes in the network (**see column 6 line 62-67**) being within a specified tolerance of a theoretical minimum (**see column 8 line 47-52**).

Regarding claim 4, Shinomiya et al. teaches a graph-theoretic condition (**see column 6 line 52-55**) is used to derive the theoretical minimum (**see column 8 line 47-52**).

Regarding claim 6, Shinomiya et al. teaches the mapping sequentially evaluates each possible path plan (**see column 4 22-27**) for each of the one or more demands and selects the path plan having a smallest maximum number of failure-related cross-connections (**see column 6 line 63-67 and column 7 line 10-13**).

Regarding claim 7, Shinomiya et al. teaches the mapping comprises:

- selecting two node-disjoint paths for each demand (**see figure 1 working communication route and protecting communication route**), wherein leveling of link loads (**see column 6 line 52-55**) is taken into account during the selecting; and
- for each demand, identifying one of the two node-disjoint paths as the primary path and the other as the restoration path (**see figure 1 working communication route and protecting communication route**), wherein a maximum number of failure-related cross-connections at all nodes in the network (**see column 6 line 62-67 and column 7 line 4-13**) is taken into account during the identifying.

Regarding claim 8, Shinomiya et al. teaches wherein:

- selecting the two node-disjoint paths for each demand minimizes maximum link bandwidth in the network (**see column 7 line 10-13**); and
- identifying the primary and restoration paths (**see figure 1 working communication route and protecting communication route**) for each

demand results in the maximum number of failure-related cross-connections at all nodes in the network (**see column 6 line 62-67 and column 7 line 4-13**) being within a specified tolerance of a theoretical minimum (**see column 8 line 47-52**).

Regarding claim 9, Shinomiya et al. teaches a tent pole condition (**see column 7 line 10-13**) is used to derive the theoretical minimum (**see column 8 line 48-52**).

Regarding claim 10, Shinomiya et al. teaches mixed-integer programming is used in each of the selecting and the identifying (**see column 11 line 12 where CPU corresponds to programming; it is inherent that CPU is run by a program, and column 6 line 50-57 teaches parameter of each node which corresponds to mixed-integer**).

Regarding claim 11, Shinomiya et al. teaches genetic programming is used in each of the selecting and the identifying (**see column 11 line 12 where CPU corresponds to programming; it is inherent that CPU is run by a program, and column 6 line 50-57 teaches parameter of each node which corresponds to mixed-integer**).

Regarding claim 12, Shinomiya et al. teaches a commercial solver is used in each of the selecting and the identifying (**see column 8 line 48-57**).

Regarding claim 13, Shinomiya et al. teaches the mapping involves demand bundling, wherein demands having a common source node and a common destination node are grouped (**see column 4 line 2-6 it is inherent that demands would have a**

common source node and a common destination node) and routed along a single pair of disjoint primary and restoration paths **(see figure 1 working communication route and protecting communication route)** and at least a portion of connection signaling for the group is carried out jointly **(see column 4 line 2-6)**.

Regarding claim 14, Shinomiya et al. teaches the mapping involves traffic aggregation, wherein multiple low-rate channels in the network are consolidated into a high-rate channel and rerouting of the high-rate channel requires fewer cross-connections than rerouting of the multiple low-rate channels **(see column 4 line 22-27)**.

Note: the phrase "capable of", "adapted to" recited in claim 15 line 2, claim 21 line 1, claim 27 line 1, and claim 28 line 1 do not positively support claim limitations, therefore the limitation after these phrases will not be considered. However, the cited reference teaches the limitations (see rejection).

Regarding claims 15-18, 20-28 Shinomiya et al. disclose network management system **(see figure 4 box 10 and column 7 line 27 corresponds to network manager)** and all the limitations as discussed in the rejection of method claims 1-4, 6-14 and are therefore system claims 15-18, 20-28 are rejected using the same rationales.

Allowable Subject Matter

8. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claim 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Arslan et al. (5706276) discloses system for restoration of communications networks.

Boer et al (US2003/0021222) discloses apparatus and method for establishment and protection of connections within mesh networks.

Mukherjee et al. (US6850487) discloses method and apparatus for guaranteeing a failure-recovery time in a wavelength-division multiplexing network.

Simmons (US6863363) discloses hierarchical telecommunications network with fault recovery.

Croslin (5995485) discloses method and apparatus for isolating network failures by correlating paths issuing alarms with failure spans.

Agrawal et al. (US2001/0038471) discloses fault communication for network distributed restoration.

Grover et al. (us 2002/0071392) discloses design of a meta-mesh of chain sub-networks.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wutchung Chu whose telephone number is 571 270 1411. The examiner can normally be reached on Monday - Friday 1000 - 1500EST.

Art Unit: 2616

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on 571 272 7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WC
Wutchung Chu

A handwritten signature in cursive script, appearing to read 'Wing Chan', written in black ink.

WING CHAN
SUPERVISORY PATENT EXAMINER